ANNUAL REPORT 2009–10

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1. Executive summary

Achievements and activities: research, commercialisation/utilisation and education

Financial year 2009–10 was the final year of ACID's CRC grant, and it achieved all outcomes as required under the Commonwealth Agreement.

ACID's foundation research program delivered significant new knowledge and scholarship in interaction design, and was the staging point for an organised, interconnected and closely networked cohort of professional practitioners and researchers in Australia and overseas.

ACID's outstanding and lasting legacy emerged from its education program. We supported 45 post-graduate students with 47 scholarships over ACID's life. Twenty-nine completed PhD or Masters qualifications, and another 14 are expected to complete in the coming 12 months. In addition to scholarship support, ACID facilitated and supported 17 industry placements for 16 students over the course of its life, with several of those being delivered under a formal internship program introduced in ACID's final 18 months.

A number of ACID projects delivered mature intellectual property which was sold or assigned to third parties for commercial exploitation during the year:

- IP created in the *MiLK* and *Cipher Cities* projects was purchased by the lead researcher who created them. They will be updated to reflect the latest developments in mobile and Internet technology then released for further testing and future exploitation;
- The *Network Jamming* suite of assets was purchased by a new SME, Exploding Art Pty Ltd, which was formed by three of the lead researchers responsible for their creation. This new company has already received significant commercial interest in exploiting the IP;
- The *MMS Me* IP was purchased by the lead researcher who created it. Plans are already in place for commercial release in the mining and conference industries;
- The *Recensio* IP was purchased by a new SME, Recensio Pty Ltd, which was formed by the project's primary industry partner Cognitia Studios and new investors. Further testing and development is being carried out prior to commercial release;
- The *ACID Vision* IP was purchased and the lead researcher employed by Bluebox, the commercialisation unit of QUT. The project is in the second stage of proof-of-concept funding, with commercial leads being generated across a range of industries; and
- The Digital Songlines Engine, along with all other IP and assets from the *Digital Songlines* project, will be used by QUT in its Old Government House digitisation project, after which they will be held by QUT as a public archive of software development in Queensland.

It is worth noting that in three cases above the IP was purchased by the researchers who created it, two by individuals and one by a newly formed SME made up of the project's key researchers. These were entrepreneurial individuals and teams from within ACID who had the desire, expertise and risk profiles to take the IP out of the research domain and into the commercial sphere.

In a fourth case, the IP was purchased by a new SME formed by the project's industry partner and new investors specifically for the purpose of further developing and commercially exploiting the IP.

Of the six IP asset sales negotiated during the year, five have the potential to deliver income streams to ACID shareholders over the five years following ACID's closure. QUT has agreed to manage receipt and distribution of revenues to ACID's shareholder organisations.

Other ACID projects began or continued exploration of newly emerging technologies and the transfer of exiting capabilities into new fields. These projects met their agreed targets and the research will continue within the primary institutions which led the projects, drawing upon the collaboration of the researchers and industry partners originally brought together at ACID.

Impediments and strategies adopted

The only significant divergence from the achievement of objectives during the year was a lower-than-projected income stream from commercialisation and contract research activities. These activities were operated on the basis that they must generate sufficient income to make a profit or at least break even, so that grant monies and contributions earmarked for foundation research were not applied to commercial activities. ACID closely managed its resource allocation to ensure activity in this area remained within its means.

Although the projected income stream from commercial activities was less than expected during the year, it is important to note that there is potential for continued income to shareholders derived from IP asset sales. The management of the receipt of revenues generated by these income streams over the five years following ACID's closure, as well as their disbursement to shareholders, will be managed under agreement by QUT.

Highlights

ACID Prize: ACID sponsored the 2009 ACID Prize for Tangible Media, for students graduating from the QUT Bachelor of Communication Design. The prize was awarded on the criteria of highest academic grade and most thorough resolution. The 2009 ACID Prize for Tangible Media was awarded to *Sonic Footprints*, created by Chris Gordon, Ryan Pascoe and Dane Tennant.

CRC Association Early Career Scientist Award: ACID student Viveka Weiley, a PhD candidate at UTS, was shortlisted for the CRC Association Early Career Scientist Award for his work in designing new digital systems to support collaborative creativity. As a result of his award nomination, Mr Weiley has already fielded practical enquiries from a number of industry sectors including software development, communications infrastructure and commercial scientific research.

Capacity-building: ACID contributed significantly to the building of national capacity in interaction design.

ACID supported 45 post-graduate students with 47 scholarships over its term. Twenty-nine students completed PhD or Masters qualifications, and another 14 are expected to complete in the coming 12 months.

In addition to scholarship support, ACID facilitated and supported 17 industry placements for 16 students over the course of its life, with several of those being delivered under a formal internship program introduced in ACID's final 18 months. Under the formal internship program, ACID assisted students to establish links with industry, provided funds towards travel and a stipend for living

expenses, provided pastoral support during the internship, and assisted each student in drawing out learnings and recommendations during final reporting.

ACID made the formal internship program available to all students enrolled in appropriate courses at partner universities. The program was not limited to existing recipients of ACID scholarships.

Legacy event: In May 2010, ACID hosted a 'closing night' event which reviewed the CRC's work over its seven-year term and reflected on its successes and learnings. Guests from ACID's industry and university partners, DIISR, State governments and other CRCs joined staff, the Board and researchers to celebrate ACID's work and its success in building a national capacity for interaction design. While the legacy event marked the end of ACID's life, it also marked the transition to a new, independent community of interaction design practitioners and researchers in Australia. Feedback from guests indicated that an event of this nature was unusual among CRCs and provided a valuable opportunity for the CRC to showcase its work, history and legacy to a broad audience.

1.1 Context and major developments

With 2009–10 being the final year of ACID's CRC grant, all operations and efforts were focussed on achieving the deliverables outlined in the Commonwealth Agreement.

Variation to agreement

ACID negotiated a formal variation of its Commonwealth Agreement, in consultation with existing and new partners and DIISR, to reflect the decision taken in January 2009 that ACID would not rebid for ongoing CRC funds. The variation was designed to ensure the completion of research programs, commercialisation and/or transfer of intellectual property, and an orderly wind-up of the CRC. The negotiation and variation process took some months commencing in April 2009, with the variation documentation being executed in September 2009.

ACID successfully delivered all requirements under the Commonwealth Agreement, and details are reported elsewhere in this document.

Changes to key roles

During the period, there was a change in Chief Executive Officer with the departure in September 2009 of Ms Suzannah Conway and the appointment of Ms Amanda Boland-Curran to the role with specific responsibility to ensure achievement of all deliverables and an orderly wind-up and conclusion. Ms Boland-Curran had joined ACID in February 2006 as Communication Manager and later became Business Manager prior to her appointment as CEO.

Mr David Barbagallo and Mr Michael Begun, ACID Directors, stood down from the ACID board on 30 June 2010 as part of the planned orderly wind-up of the company.

Primary objective

In the context of interaction design in Australia, ACID was successful in its original aim of drawing together a range of related but disconnected fields of practice into a single, coherent interaction design discipline. It can be argued that the leaders in interaction design research and practice in Australia were brought together, challenged by and supported at ACID during its seven-year term.

ACID's Research Leaders Group expressed an interest in creating a new organisation or network which would continue to provide a central point, or hub, for interaction design in Australia. They are investigating informal networks and structures as well as formal opportunities such as the creation of an Australian Research Network.

1.2 Value of outcomes to date

Background: the creative industries sector and ACID's goals

A gap in the sector

ACID was established in 2003 in response to a need in the creative industries sector in Australia. As a result of most players in the creative being small enterprises, they lacked the critical mass and capacities to access leading research essential to competitive advantage at home and abroad.

Interaction design: a new discipline

Interaction design emerged from a number of related but disconnected research and practice specialisations: human–computer interaction, usability studies, information design, visual design, communication design, software engineering, ICT, creative practices and many other fields. All these specialties worked independently on aspects of the challenges posed by the way people interacted with emerging technologies, but in 2003 Australia had no integrated discipline of interaction design - no single identifiable industry or industry body, and no core body of researchers.

Content creation: a new paradigm

At the same time, content creation was becoming easier and more accessible for individuals and for communities of interest. The distinction between 'content consumer' and 'content producer' was breaking down; consumers were creating and distributing their own content, and they began to demand new creative tools as well as new networks and infrastructure to support content distribution.

ACID's goals

One of ACID's overarching goals was to develop and integrate the interaction design discipline in Australia, as an optimum vehicle for delivering economic growth and advancing Australia's role in the global economy from consumer to exporter of creative content. ACID proposed to do this by bringing together a cohort of skilled and knowledgeable people to create and exploit new intellectual property underpinned by industry-driven academic research and sound commercialisation strategies.

ACID envisaged delivering significant benefit to industry, universities and government through access to:
- multi-disciplinary research and new commercialisation models;
- new partnerships, linkages and communities of interest;
- practical strategies for relating technical innovation to community development; and
- strong international networks of industry, government and universities that would support international commercialisation efforts and export processes.

Process: game-changing developments demanded a refocus

Over the course of ACID's seven-year term, new tools, networks, standards and infrastructure emerged which radically shifted the landscape of content creation and distribution. Google, Facebook, Twitter, MySpace, and YouTube are some current examples of the new, game-changing paradigms that took control of the message out of the hands of large, well-resourced, centralised organisations constrained by the traditional concerns of business and media, and placed them in the hands of individuals and agile, fast-moving, fluid groups who could now participate more actively and gain more attention for alternative points of view in politics, business and news.

In parallel, commercially focussed breakthrough research and development in the creative industries and IT shifted from large, well-resourced monolithic corporations to individuals and small, agile groups. Each new tool or process spawned others as creation and development became easier to access, barriers to entry fell, and early versions of new tools were snapped up for further development by well-resourced large organisations utilising new, riskier, more nimble business models.

A detailed review is outside the scope of this report but it is worth noting that these tools and models, ubiquitous today, emerged after ACID was established. This necessitated the periodic re-shaping of ACID's research programs to incorporate the new directions made possible by the new technologies. ACID's initial Commonwealth Agreement was varied several times to incorporate changes to the research program made in response to sea-changes in the sector.

As the sector changed, so did ACID's focus and objectives change: from aiming to build new paradigms and tools that would serve an entire sector, ACID narrowed its attention to specific developments that would serve specific areas or types of need.

Impacts: value of ACID's outcomes

National capacity building: partnerships, linkages and communities of interest

Notwithstanding the distilling of its focus and objectives over its term, ACID did meet its overarching goal in relation to the interaction design discipline in Australia. As a facilitator of regular contact and project collaborations between researchers across the country, ACID played a crucial role in increasing national research capacity in interaction design by transferring knowledge, expertise and best-practice methodologies between partners, and by establishing new research partnerships which will continue into the future.

In addition to facilitating the emergence of an interaction design discipline in Australia, ACID provided scholarships, pastoral care and internships to support the development of 45 new interaction designers, many of whom have gone on to practice around the world. These early-career designers form a vibrant part of the network of interaction designers formed around ACID's hub. Their work in Australia and internationally informs the ongoing conversation within the discipline.

Multidisciplinary research models

ACID created new approaches to true multi-disciplinary interaction design research which were disseminated across all research programs. These models and methodologies are now drawn on by all researchers and practitioners associated with ACID, for use in their ongoing research and commercial interaction design practice.

New SMEs

ACID participated in two spinoff companies during its term:

- Codocs Trading Pty Ltd and Codocs Holdings Pty Ltd, a small enterprise developing online, multi-party collaborative document creation (since closed); and
- Diversionary Therapy Technologies Pty Ltd, now an independent company exploiting intellectual property created at ACID – see page 23 for more information.

ACID also provided the environment for the establishment of two other new SMEs, both set up to further develop and commercially exploit IP created at ACID:

- Recensio Pty Ltd, a new company established by ACID partner Cognitia Studios and new third-party investors, purchased IP developed by ACID for annotating digital media assets and supporting collaborative decision making; and
- Exploding Art Pty Ltd, a new company established by three entrepreneurial ACID researchers, purchased IP developed at ACID for digital generative media creation.

Successful extension of ACID's work through a supplementary funding bid

In 2005, ACID secured supplementary funding for an ambitious three-year research program investigating new models for interactivity in television advertising and collaborative platforms for stakeholder involvement in the creative development of rich media works.

This program, New Models of Television Advertising, was distinctly commercial in nature from the very outset, with strong industry involvement in setting the direction and international corporations driving the research. The research results were subject to commercial embargo for a period of 18 months after dissemination to industry partners, giving those partners a unique and valuable advantage in the marketplace.

This program had substantial international impact, shaping the direction of broadcast media interactivity and forming the basis of ongoing research into the future of television and online advertising at the Interactive Television Research Institute at Murdoch University

Commercialisation and technology transfer

ACID undertook contract research and development projects for third-party clients throughout its term, and successfully commercialised a number of intellectual property assets. See *Commercialisation* on page 22 for more information.

The ACID legacy

Interaction design is an enabler for new products, services and technologies relevant to the many and varied fields of endeavour that look to improve the human condition through well-designed, technological experiences.

ACID was not a single-industry CRC designed to support the technical advancement of a particular industry's techniques, products and services. Rather, ACID engaged with industries as diverse as telecommunications, health informatics, advertising, residential land development, business finance and consultancy, architecture, fire safety, and medical technology – and these engagements came naturally as a result of ACID researchers' interest in enhancing human experience and quality of life through technology.

ACID's long-term legacy is a greater capacity for, understanding and application of interaction design across a range of industry sectors in Australia. In particular, research conducted under the New Models of Television Advertising program (supplementary funding) has made a lasting impact on the television advertising industry globally, changing the way advertisers research, create and distribute interactive advertisements.

2. Governance and management

Governance structure

ACID is a proprietary company limited by shares. Its corporate governance structure comprises the Board of Directors, Audit Committee, and management team. The wholly owned subsidiary, ACID Services Pty Ltd, has its own governance structure and Board of Directors.

Board of Directors

ACID's skills-based Board comprises independent members and participant representatives, plus an independent Chair, Prof Mary O'Kane. See *Table 1: Board members, CEO and committee members 2009–10.*

The Board sets the strategic direction and establishes the policies that shape ACID's operations, and monitors ACID's financial position, business affairs and research directions. Responsibility for day-to-day activities is delegated by the Board to the Chief Executive Officer and the management team.

Function and frequency of meetings: The Board meets regularly to oversee the operations and management of the company. During the 2009–10 year, the Board met on eight occasions. See *Table 2: ACID Board meetings 2009–10*.

Changes to Board membership: On 23 September 2009 Ms Suzannah Conway resigned from the role of Chief Executive Officer and Director, and Ms Amanda Boland-Curran was appointed to that role.

On 30 June 2010, as part of the planned orderly wind-up of the company, Mr David Barbagallo and Mr Michael Begun resigned from the Board. ACID now has five Directors, the minimum required under its Constitution, who will guide the wind-up of operations and deregistration of the company.

Audit committee

The ACID Audit Committee is a subcommittee of the Board. It reviews and oversees management processes and assists the Board and company officers in financial reporting, compliance, internal control systems, audit activities, risk management and any other matters referred to it by the Board.

At 30 June 2010 the Audit Committee comprised Bill Trestrail, Chair, and Prof Rod Wissler, Sponsor Director. The Chief Executive Officer and Finance Manager attend Audit Committee meetings, and other members of the team are invited to attend as required. The Audit Committee met monthly during the final year of ACID's operations in order to guide the CRC through the process of winding up.

Changes to participants

New participants: The Endeavour Foundation was admitted as a research participant on 1 June 2009, approved by the Commonwealth via Deed of Variation executed 25 September 2009.

Withdrawing participants: During the reporting period, the following core participants in the Commonwealth Agreement withdrew via a formal variation to the Commonwealth Agreement: Auran Technologies Pty Ltd, Cyberdreaming Pty Ltd, Imap Systems Pty Ltd, Heritage Properties Pty Ltd.

See *Table 3: Changes to participants 2009–10.*

Table 1: Board members, Chief Executive Officer and committee members 2009–10

Name	Organisation	CRC Position / Role
Prof Mary O'Kane	Mary O'Kane and Associates Pty Ltd	Independent Chair, Independent Director (Research)
Prof Rod Wissler	QUT	Sponsor Director, Audit Committee Member
Prof Sue Rowley	UTS	Director (Research)
Mr David Barbagallo	Endeavour Foundation	Independent Director (Commercialisation) to 30 June 2010
Mr Michael Begun	CM Capital Investments	Independent Director (Commercialisation) to 30 June 2010
Mr Bill Trestrail	Independent	Independent Director (Industry), Audit Committee Chair
Ms Amanda Boland-Curran	ACID	Director and CEO from 23 September 2009, Company Secretary
Ms Suzannah Conway	ACID	Director and CEO to 23 September 2009
Prof Arun Sharma	QUT	Alternate Director for Prof Rod Wissler

Table 2: ACID Board meetings 2009–10

Director	3 Aug 09	23 Sep 09	28 Oct 09	8 Dec 09	28 Jan 10	23 Mar 10	20 May 10	15 Jun 10
Prof Mary O'Kane	✓	✓	apology	✓	✓	✓	✓	✓
Prof Rod Wissler	✓	✓	✓	✓	✓	✓	✓	✓
Prof Sue Rowley	✓	✓	✓	✓	✓	✓	✓	✓
Mr David Barbagallo	apology	✓	✓	✓	✓	✓	✓	✓
Mr Michael Begun	✓	✓	apology	✓	apology	apology	apology	✓
Mr Bill Trestrail	✓	✓	✓	✓	✓	✓	✓	✓
Amanda Boland-Curran		✓	✓	✓	✓	✓	✓	✓
Suzannah Conway	✓	✓						

Table 3: Changes to participants 2009–10

Participant Name	Retiring or New	Commonwealth Approval
Endeavour Foundation	New	Yes: Deed of Variation executed 25 September 2009
Auran Technologies Pty Ltd	Retiring	Yes: Deed of Variation executed 25 September 2009
Cyberdreaming Pty Ltd	Retiring	Yes: Deed of Variation executed 25 September 2009
Imap Systems Pty Ltd	Retiring	Yes: Deed of Variation executed 25 September 2009
Heritage Properties Pty Ltd	Retiring	Yes: Deed of Variation executed 25 September 2009

3. National research priorities

Table 4: National research priorities

National research priorities	CRC research (%)
AN ENVIRONMENTALLY SUSTAINABLE AUSTRALIA – Transforming the way we use our land, water, mineral and energy resources through a better understanding of environmental systems and using new technologies	
Water – a critical resource	5
Transforming existing industries	10
PROMOTING AND MAINTAINING GOOD HEALTH – Promoting good health and preventing disease, particularly among young and older Australians	
Preventive healthcare	5
Strengthening Australia's social and economic fabric	10
FRONTIER TECHNOLOGIES FOR BUILDING AND TRANSFORMING AUSTRALIAN INDUSTRIES – Stimulating the growth of world-class Australian industries using innovative technologies developed from cutting-edge research	
Breakthrough science	5
Frontier technologies	10
Smart information use	30
Promoting an innovation culture and economy	20

4. Research programs

4.1   Research activities and achievements

As a centre for interaction design research, ACID's strengths lay in:

- social participation and technology – exploring ways to facilitate collaboration, interaction and the development of social capital through technological interventions in communities;
- digital perspectives of the world – helping people better or differently understand their world through digital representations that highlight selected relationships, features or meanings; and
- dynamic media creation and application – enhancing creative potential through digital media content creation, manipulation and presentation by developing methods and tools with particular emphasis on automation, generation and adaptation.

ACID's researchers and industry partners brought skills and capacities including:

- understanding social contexts;
- identifying problems in interactive experiences;
- designing technology-based solutions to human problems;
- understanding the potential of digital technologies;
- rapidly developing software and hardware prototypes;
- collaborating in multi-disciplinary teams;
- incorporating a refined aesthetic sensibility in work; and
- focussing on design processes, research processes and evaluation strategies.

ACID's relationships with industry partners were based on the common interest in interaction design. The integration of new and emerging digital technologies into industry contexts was preceded by ACID's exploration of the potential impact of those technologies and interpreting how they could create value.

ACID conducted five research programs over the course of its seven year CRC grant:

- Digital Media (Creative Communities);
- Multi-User Environments (Virtual Communities);
- Smart Living (Suburban Communities);
- Virtual Heritage (Indigenous Communities); and
- New Models of Television Advertising (Beyond:30).

See *Table 5: ACID program leaders as at 30 June 2010*

ACID took an integrated approach to reporting and transferring its research across the five programs, with a research management structure that encouraged transmission and assimilation between the research programs. At the end of its CRC funding on 30 June 2010, ACID had undertaken over 127 individual research projects, a significant proportion of which combined elements of all of programs, resulting in true trans-disciplinary research and the creation of new knowledge.

ACID also delivered contract research activities to deliver concrete, real-world solutions to client problems. These contract research activities were typically delivered by trans-disciplinary teams sourced as required from within the research programs (see *Commercalisation* on page 22 for more information on ACID's contract research activities).

Table 5: ACID program leaders as at 30 June 2010

Name	Organisation	CRC Position / Role
Prof Andrew Brown	QUT	Research Manager and Program Leader, Digital Media
Mr Jeremy Yuille	RMIT	Program Leader, Multi-User Environments
Prof Margot Brereton	QUT	Program Leader, Smart Living
Mr James Hills	SGI	Program Leader, Virtual Heritage
Dr Anika Schweda	MU	Program Leader, New Models of Television Advertising

Key research highlights

Digital Media program

Overview of the program 2003–10
The Digital Media program was established to:
- explore the opportunities that digital imagery, video and audio would play in the design of interactive digital systems;
- develop new techniques and approaches that would enhance artistic interactions and creative expression; and
- prototype, deploy and evaluate the effectiveness of novel systems based on rich media interaction.

Research objectives included enabling self-expression, understanding through interaction, efficiency through automation, and collaboration through networking.

Themes arising from the research
ACID's focus on transmission and assimilation of research across research programs led to cooperation and collaboration between the projects within the Digital Media program. As a result, four themes arose from the Digital Media program over its life:

Generative media: exploiting the capacity of digital systems to be automated, ACID explored new algorithms and applications for creating and manipulating music, image and video in real time. Research outcomes included new generative algorithms, techniques for intelligently transforming musical scores, processes for the automatic spatialisation of sound in 3D environments, techniques for feature identification in audio and video streams, and methods for automatically synchronising video to audio in real time.

Network collaboration: several projects across many of ACID's research programs investigated distributed group interaction enabled via digital networks. Within the Digital Media program, ACID explored how rich media play a role in distributed interaction, particularly in the contexts of playful interaction, education and peer review through annotation. ACID focused on the design of efficient or 'clever' approaches to collaborative media rather than technical solutions for faster data transfer. Research outcomes included systems for location-based games using mobile and web technologies, distributed media performance, online annotation and discussion of rich media, network meta-tag search from distributed media data, and assisting online creative collaboration.

Interactive performance: ACID's exploration of the emerging area of real-time or 'live' digital media interactions in performing arts contexts led to the development of new performance infrastructure and environments, systems for real-time audio-visual performance, novel approaches to media performance, and applications for performance with mobile technologies.

Measurement and evaluation: in addition to enabling new digital media interactions, ACID also investigated the measurement and evaluation of their effectiveness. Research outcomes included the validated qualitative research techniques, theoretical taxonomies of interactive engagement, approaches to dynamic visualisation of qualitative data, and the use of public digital media installations that monitor the pulse of communities.

Highlights of the final year, 2009–10

The *Network Jamming* project continued its strong international collaborations with trials of its 'jam2jam' software system in several sites across Australia, Europe, the USA and Asia. The team finalised an updated version of jam2jam for the latest operating system of the One Laptop Per Child computer. The OLPC version led to additional industry partnerships for distribution and trials of the system in schools and communities in regional and remote areas of Australia.

The *Physical Interfaces Infrastructure* project developed much-needed infrastructure for mapping sensor devices to computer software systems. These software libraries were tested in interactive installations at medical facilities and in entertainment contexts. The work of this team was featured at the New Interfaces for Music Expression international conference held in Sydney in June 2010.

Other activities of the program included the ongoing deployment of creativity support software systems through public download and targeted trials. The *Metascore* generative film scoring application gained acclaim and interest from industry experts during ACID's investigation of the potential market for the project. There were tens of thousands of downloads of *MIXDEX lite*, an iPhone music application, and the *Oscillating Rhythms* generative music application. Program researchers worked with the State Library of Queensland on a generative audio-visual display for the Indigenous heritage section of the main library campus in Brisbane – scheduled for installation in late 2010 after ACID closed.

See *Commercialisation* on page 22 for information on commercial pathways of research outcomes from the Digital Media program.

Multi-User Environments program

Overview of the program 2003–10

ACID's Multi-User Environments research program was established to provide a process for deploying engagement methods, interaction templates and a financially viable governance and management platform for formal, distributed applications for multi-user, multi-platform technologies and experiences. The aim was to enable industry and the broader community to incorporate both real-time and asynchronous online collaborative environments into work and education practices.

When this research began, multi-user environments were a relatively new development. ACID conducted ground-breaking research into the standards, models and expectations that would underpin ongoing development, including data security, best-practice standards for connected information environments, and research and production process management.

Drawing on its strong connection to the creative industries, ACID created living test beds for iterative deployment, review and redevelopment of these underpinning standards and models.

For example, the *Australian Creative Industries Network* project created a platform for shared work, exhibitions and real-time events. This platform was embodied in the *Intimate Transactions* exhibition whereby two exhibition visitors at a time could each manipulate a full-body interface, the 'Body Shelf', to direct the real-time movements of an avatar on a screen. The body shelves themselves could be located anywhere in the world and connected via the Internet, allowing visitors to interact with the work and each other via the virtual environment inhabited by the avatars. *Intimate Transactions* has toured extensively worldwide.

Other ACID projects included *Human Dimensions Methodologies* and *Scribblr*, each of which explored aspects of collaborative work environments and contributed new knowledge in multi-user environments as well as informing later ACID projects.

Highlights of the final year, 2009–10
ACID continued its collaboration with Deloitte Digital on data visualisation and its effects on the financial services industry through the *Loupe* project based at RMIT in Melbourne. The success of this collaboration gained attention in mainstream media with articles in *The Australian Financial Review* and *Johnny Holland Magazine.* The Loupe project extended its collaborations to work with Lonely Planet in the GovHack workshops where they applied their data visualisation research to the automated gathering and presentation of time sensitive tourism information. It is expected that the *Loupe* project will continue its collaborations with Deloitte Digital in the future.

ACID worked closely with the Australian Broadcasting Corporation on a review and redesign of the *Pool* web site, the ABC's portal for gathering user-generated content for redistribution and possible use in their mainstream programs. Researchers from ACID applied their interaction design expertise to assist ABC staff in the review and re-conceptualisation of both the site and the organisation's relationships with the community beyond being audiences. The ABC has commissioned a second phase of this project, which will incorporate ACID's recommendations in ongoing development of the portal. This second phase will be delivered by the same researchers, who are based at RMIT in Melbourne.

The *Recensio* project developed technologies for annotating digital media assets and supporting collaborative decision making around those assets. The project drew on live test-beds provided by QUT teaching and learning services and Arts Victoria for trials of the annotation and collaboration system. The team collaborated strongly with Cognitia Studios and Arcitecta as industry partners, and ACID negotiated the sale of the Recensio IP to a new SME formed by the director of Cognitia Studios and other individuals. See *Commercialisation* on page 22 for more information.

ACID and its new industry partner, the Endeavour Foundation, collaborated on the *Accessible Interactions* project which researched and developed digital technology solutions to address key needs of the Endeavour organisation across Queensland and New South Wales. Endeavour was specifically interested in supporting and enriching the lives of its clients with an intellectual disability, and of their carers at home and support workers in the workplace. The project produced new knowledge about the possibilities of social technologies to encourage engagement and participatory relationships for people with an intellectual disability, carers, families and support workers. This project will continue into the future, incorporating researchers based at QUT and UQ, in collaboration with researchers, staff and clients at Endeavour facilities.

Smart Living program

Overview of the program 2003–10

The Smart Living program was established to explore social interaction dynamics. Its original goals were:

- to provide a blueprint for deploying group interfaces for content creation;
- to develop a series of formally managed test beds to allow researchers, educators, property developers, telecommunication companies and media channels to explore the use of emerging technologies for human interaction; and
- to develop new models, methods, templates and technologies that would enable interactive activity in functioning communities.

ACID's research in these spaces led to the development of new systems and technologies, as well as new paradigms for collaboration on both content and hardware outputs.

For example, the *Diversionary Therapy Technologies* project – a collaboration between QUT, ACID, the Royal Children's Hospital in Brisbane, and a range of software, hardware and content designers and creators – led to the spin-out of Diversionary Therapy Technologies Pty Ltd, which is now an independent and successful provider of clinically trialled, media-based, medical devices and solutions.

The *Mobile Learning Kit* and *Cipher Cities* projects together created the basis of new platforms for creation and delivery of assessable, pedagogically sound curriculum content via mobile phones and the Internet. These projects explored how students and educators can work together to develop their own education material. During ACID's final months prior to the end of its funding cycle, the intellectual property generated by these projects was sold to a third party who intends to exploit it commercially.

Highlights of the final year, 2009–10

The *Urban Interfaces* project considerably expanded its deployment of technologies and mature systems in real-world contexts during ACID's final year. These deployments included the extension of the *Nnub* community digital notice board to include communication with mobile devices via SMS and with web services such as Twitter, extending the access to *Nnub* message communications by users. *Nnub* installations included an interactive display in QUT library for students and staff, and another based at the State Library of Queensland for community members interested in family history. New deployments of the *Infopoint* Bluetooth data-push project included community sites at West End in Brisbane and research sites in New Zealand. These deployments have provided significant benefit to the communities and have helped refine the research as it relates to use in context. The research will continue, based at UQ and QUT, in the future.

After much engagement with Cochlear Ltd as a contract research and development partner over recent years, ACID finalised its research collaboration with a project examining the potential role of social technologies as a platform for broad and cost-effective dissemination of health support services. The *Inhale* project drew on both the knowledge of the client by ACID researchers and the wealth of knowledge in interaction design methodologies to investigate and report on the interaction design challenges around the deployment of health services and technologies in developing countries including India and China.

Virtual Heritage program

Overview of the program 2003–10

The Virtual Heritage program was an innovative and exciting program which researched the improved preservation of cultural heritage using advanced technologies, with a strong emphasis on Australian Indigenous cultural heritage. The program developed new virtual heritage methodologies and toolkits to provide improved means of communicating and sharing cultural heritage narratives and information.

The program attracted participants from across Australia, with academic researchers from QUT and UQ in Brisbane, Murdoch University in Perth, and RMIT in Melbourne, as well as industry partners Cyberdreaming, a Brisbane-based Indigenous multimedia publishing company, and SGI, an international information technology company.

Projects within the program investigated a range of topics including:
- the use of computer game technology to convey cultural and historical narrative, context and meaning;
- simplified reconstruction of 3D environments from multiple photographs using computer algorithms and techniques; and
- work with Indigenous groups on protocols, language, narrative, bush foods, cultural practices, lore and laws.

The *Digital Songlines* project extended computer gaming technology to provide large-scale realistic landscapes linked with location and incorporating time-varying soundscapes. It supported the re-presentation of Indigenous stories, culture, practices and histories as a cultural ark using modern games technology to capture an ancient culture, embedding oral histories, stories and the sense of spiritual connection to the land represented in the game world.

Two titles were developed with the Gunggari and Kooma people of central Queensland:
- *Irene's World* allows users to explore the material cultural and language of the Gunggari community centred around Mitchell in South-West Queensland. This world received encouraging feedback from the community, with one user telling us "I can almost feel the dust between my toes". With only a few speakers of Gunggari language remaining, Irene's World is also a means of teaching language to younger generations in an interactive and engaging way.
- *Vincent Serico* explored the strong links between country and the paintings of widely respected Indigenous artist Vincent Serico.

A third title, *Virtual Warrane*, was developed in collaboration with the Cadigal people of country around Sydney Harbour, close to the landing site of the First Fleet. Virtual Warrane was a major exhibit at the Sydney Customs House in 2007 and was visited and explored by upwards of 100,000 people over the three-month exhibition period.

ACID's Virtual Heritage program garnered significant international attention and linkages with Indigenous people around the world when the *Digital Songlines* project was presented at the United Nations World Summit on Information Technology in Tunisia, and at international Virtual Systems and Multimedia conferences in Japan, Belgium, China and Brisbane. Local interest followed on the presentation of an AIIA iAward in the Education and Training category.

Closely drawing on the results of the *Digital Songlines* project, the *Ngurra2Rivers* project explored skills requirements and the use and acceptance of multi-media and digital techniques by Indigenous communities for effective recording, storing and sharing of oral histories and cultural narratives. ACID sincerely thanks the Juluwarlu Aboriginal Corporation of Roebourne WA and the Yindjibarndi and Ngarluma communities for their generous participation in this project.

ACID Vision developed new algorithmic methods and tools for creating accurate 3D models from multiple digital images in a short period of time and with little or no user interaction. The applications allow for the creation of bump-maps of surfaces from images and high-definition 3D modelling using robust and accurate feature extraction and tracking, and turntable-based calibration. The project engaged in successful trials with the digitisation of artefacts from the Queensland Museum, and worked with unmanned aircraft companies to develop robust camera-based mapping and terrain-modelling applications. A technology demonstrator was made available through a free web service, the *3Dsee* website, where members of the public could upload photographs from anywhere in the world and the software would create 3D graphical versions from which 3D models could be derived. The site handled over 100,000 users of the service.

Highlights of the final year, 2009–10

The Virtual Heritage research program was completed before the commencement of this reporting period, but the research outcomes were transferred into and contributed to the success of the commercialisation of the ACID Vision project.

ACID successfully negotiated commercial pathways for future exploitation of both *Digital Songlines* and ACID Vision by third parties. See *Commercialisation* on page 22 for more information.

New Models of Television Advertising program (supplementary funding)

Overview of the program 2003–10

In 2005, ACID secured supplementary funding for an ambitious three-year research program investigating new models for interactivity in television advertising and collaborative platforms for stakeholder involvement in the creative development of rich media works.

The research foundations of this program were focussed on message recall and purchase intentions among consumers of advertising content, and rapid virtual prototyping for amendment and commentary on testing advertisements.

The research outputs comprised:
* 24 individual laboratory-based studies, of at least 1000 research subjects per study, investigating when and how consumers interact with interactive advertising;
* development of a secure collaborative platform for rich media content engagement and editing; and
* development of a methodology and platform for engaging stakeholders in research development: industry partners voted on the research project topics, commented on and amended rich-media advertisements for testing in the laboratory, and evaluated the rapid virtual prototyping experience.

This program had two major differences from other ACID research programs. First, the research context was distinctly commercial from the outset, with an industry partner cohort of over 25 major international corporations driving the research. Second, the industry partners secured exclusive rights to the research results, with an embargo on release of each study for a period of 18 months after dissemination to the industry partners.

The embargo applied only to the results of the research question for each study, however, so did not affect ACID's ability to apply its broader interaction design learnings to other programs and projects.

For example *Yodel*, ACID's secure and proprietary visual interaction utility for the sharing and co-editing of rich media and interactive works, provided the platform for conducting the studies but was not itself being studied. As a result, the ongoing development and iterative testing of the *Yodel* platform which was carried out within this program benefited other ACID programs and projects which used *Yodel*. Also, ACID's learnings in the area of rapid virtual prototyping were assimilated into a range of other projects investigating collaborative review of rich media assets.

Legacy: ACID's New Models of Television Advertising program came to a close at the beginning of 2008–09, presenting its final research outcomes in the first quarter of that year. The legacy of this program was remarkable. It had substantial international impact, shaping the direction of research into broadcast media interactivity and collaborative virtual prototyping environments. In particular, the 24 industry-commissioned studies formed the basis of ongoing research into the future of television at ITRI, which has now extended into online advertising interactivity research.

Highlights of the final year, 2009–10

ACID combined the research outcomes of the New Models of Television Advertising program with those of the Virtual Heritage program's *3Dsee* project in a new project, *EyeScout*, which developed an enhanced eye-gaze tracking system using 3D image modelling to compensate for research subjects' movements during interactive television experiments.

The advances made in the *EyeScout* project greatly increased the accuracy and reliability of eye gaze research data in situations where subjects are in a more casual relaxed context, allowing research to be conducted in environments more like a lounge room than a lab. The *EyeScout* project was transferred back to Murdoch University for continued research in the future.

Consultancies

ACID delivered a number of contract consultancies during 2009–10. See page 22 for more information.

Grants

No new grants were received in 2009–10.

Changes to future directions

Several ACID projects will have a range of research futures now that ACID has completed its term. These include the commercialisation of IP, ongoing relationships with partners in joint trials and grant submissions, work on ARC grant proposals building on the work of ACID researchers, and the ongoing publication of results from recent project activities.

4.2 Research collaborations

External collaborations

ACID's external collaborations in 2009–10 stemmed from both ACID's research programs and research and development services contracts. The research projects enjoyed much collaboration from industry partners and interested parties such as the Endeavour Foundation, Deloitte Digital, ABC Radio National, Queensland Museum, State Library of Queensland, CreActives, Arts Victoria, Brisbane Powerhouse, Lonely Planet, Ellaways, ResMed and Sibelius.

ACID Services continued to take on high-risk research projects with Australian commercial clients and industry, and to utilise these valuable connections to feed new knowledge back into the CRC's underlying research program (see page 22 for more information).

ACID further facilitated collaborations between research students and industry through a series of internships (see page 28 for more information).

Internal collaborations

During 2009–10, ACID focused on providing opportunities for researchers within different programs and projects to share expertise and collaborate on specific deliverables. ACID communicated these projects across the programs, and identified additional opportunities for cross-organisational collaboration, at quarterly review meetings, seminars and internal showcase events.

5. Commercialisation and utilisation

5.1 Strategies and activities

Due to the speed of advancement in new digital technologies and to ACID's application of interaction design across multiple industries, ACID challenged the notion of full-term engagements between a CRC and its commercial partners. Partnerships that made sense at the start of a typical full-term relationship would have lost much of their initial relevance by mid-term, and would certainly be vastly different by the end of ACID's seven-year term.

As a result, ACID took a project-based approach to technology transfer and creation of commercialisable intellectual property, whereby short-term partners contracted ACID's services to challenge their current thinking, investigate emerging issues, or solve particular problems through design or development intervention. Engaging with these 'non-core' partners created experiences and knowledge in often unexpected ways – which is typical of the interaction design discipline – and these new understandings then fed back into ACID's ongoing research programs and other contract projects.

ACID transferred technology and knowledge arising from its core and contract research to partners, related industries and end users in general through:
- engagement and education of graduates in research program activities;
- involvement of industry in research program design and execution;
- publications;
- seminars, workshops and conference presentations;
- industry visits, placements and internships;
- contract research;
- sale or licensing of IP assets; and
- establishment of new business streams and entities.

ACID Services Pty Ltd

As ACID matured and new knowledge was created, there was an increasing need to approach commercial opportunities in a structured manner. As a result, ACID created a wholly owned subsidiary company, ACID Services Pty Ltd.

From mid-term in ACID's life, ACID Services hosted all commercialisation activities and contract and consultancy projects other than activities specifically related to the five major research programs. ACID Services undertook projects in the following areas:
- User interfaces for integrated mobile applications;
- Health communication service;,
- User interface design and content development;
- Virtual property services; and
- Customer-focused product design.

These projects tended to be in the nature of domain-independent breakthrough innovation using practice-based research, and included elements of risk for the client. The projects sought to apply ACID's core research to the needs of external partners and, in turn, fed new knowledge and industry testing back into the foundation research program.

Typically, ACID Services clients presented a need for specific deliverables they had identified themselves. ACID's challenge was to turn these fixed ideas around and encourage the client to undertake a holistic investigation of the problem. The key aspect of this approach was collaborative problem solving, led by ACID's interaction designers, which enabled the client to look beyond the obvious, redefine the problem and contextualise their real needs so that best-practice solutions could be designed.

Clients benefited from the outcomes of the contracted research projects, with many commissioning follow-on projects. Clients included:

- Nokia Research Centre – Finland;
- Cochlear Limited – Australia, China and India;
- ResMed Pty Ltd;
- Queensland University of Technology;
- State Government departments, Queensland and Victoria;
- Department of Defence;
- UniLodge Pty Ltd;
- First 5 Minutes Pty Ltd; and
- EcoVision Pty Ltd.

Case study: Diversionary Therapy Technologies Pty Ltd

While contract research activities for clients added substantially to ACID's technology transfer goals, ACID also engaged in a number of IP licensing and sale deals. The most high-profile of these was the creation and spin-off of Diversionary Therapy Technologies Pty Ltd.

ACID led a collaborative study with the Stuart Pegg Paediatric Burns Centre located at the Queensland's Royal Children's Hospital to investigate the use of augmented reality within the constraints of the clinical setting and required medical procedure. ACID provided a capacity to analyse unique situations – such as this hospital context – and then design and develop interactive devices and media appliances to suit people's real needs.

The multidisciplinary research team consisted of medical physicians, industrial designers, content developers and computer scientists. The outcome of the research resulted in a combined hardware and content solution which was evaluated within a clinical environment to quantify the benefits of the management of pain as a diversionary therapy approach for paediatric burns patients. These prototypes underwent clinical trials and were proved as successful in relieving anxiety and reducing pain scores in child patients.

Out of this trialling, technology solutions were chosen that formed the basis of early prototypes and the first phase models of the diversionary therapy device.

In 2006, ACID Services Pty Ltd and other partners established a new independent company, Diversionary Therapy Technologies Pty Ltd, to allow for the full commercial development of the device and software. ACID divested its shareholding in the company in 2008. The company has successfully negotiated a number of rounds of funding and full trialling of advanced prototypes has occurred in Australia, Europe and the US. The company is close to entering into full production of this first commercial product – now named DITTO. Details of current activities can be found on the company website at www.dtt.net.au.

Highlights of the final year, 2009–10

In its final year of operations, ACID Services shifted its primary focus from consultancy operations to the value pathways of ACID's intellectual property assets. Fee-for-service consultancy activities continued but were scaled back to accommodate the focus on IP maturation and transfer.

A number of research projects reached pre-commercial and commercial stages during ACID's final months, with a range of activities undertaken to assign these properties to third parties for exploitation after ACID's term.

At the start of the 2009–10 year, ACID had existing licences in place for the further development and/or commercial exploitation of three IP assets:

• The Digital Songlines Engine, created within the *Digital Songlines* project, was licensed on a non-exclusive basis to VR Space Pty Ltd, a developer of real-time virtual reality environments;

• *MiLK* was licensed to Secret Sauce IP Ventures, a Melbourne based IP commercialisation firm; and

• *Yodel* was licensed to the Institute of Creative Industries and Innovation.

Throughout the 2009–10 year, it became clear that no successful avenues for exploitation of *Digital Songlines* or *MiLK* had been found by the licensees, so ACID terminated those licences in preparation for alternative assignment. ACID also prepared other mature IP assets for commercial pathways: *ACID Vision, Network Jamming, Recensio* and *Cipher Cities*.

See *Intellectual Property Management* below for details of ACID's successful transfers of IP assets.

5.2 Intellectual property management

ACID's proprietary web-based IP Registry ensured effective management of all intellectual property assets. The ACID IP Registry comprised a secure website catalogue and associated framework for central registration of IP and other proprietary information including major administrative documents such as contracts, correspondence, project orders and variations; demonstrators and prototypes; video, audio and graphic resources; code; scripts; patents and trademark information.

The registry was accessible to all ACID researchers over the Internet and offered a number of levels of access associated with security and allocated project roles. Research program managers and project leaders were responsible for uploading IP directly to the system, with compliance reviewed at each quarterly program review. ACID constantly reviewed and revised the processes for use of the ACID IP Registry.

All intellectual property generated within ACID research programs was legally the property of ACID. Researchers and students were and remain entitled to the copyright in specific expressions of that IP. Intellectual property generated as part of ACID's commercial contract with clients was dealt with on a case-by-case basis.

Highlights of the final year, 2009–10

ACID successfully negotiated arms-length commercial sales of the following IP assets:

• *MiLK* and *Cipher Cities* were purchased by the lead researcher who created them – they will be updated to reflect the latest developments in mobile and Internet technology then released for further testing and future exploitation;

- The *Digital Songlines* Engine, along with all other IP and assets from the *Digital Songlines* project, will be used by QUT in its Old Government House digitisation project, after which they will be held by QUT as a public archive of software development in Queensland;
- The *Network Jamming* suite of assets was purchased by a new SME, Exploding Art Pty Ltd, which was formed by three of the lead researchers responsible for their creation – this new company has already received significant commercial interest in exploiting the IP;
- The *MMS Me* IP was purchased by the lead researcher who created it – plans are already in place for commercial release in the mining and conference industries;
- The *ACID Vision* IP was purchased and the lead researcher was employed by QUT, under management by Bluebox, the commercialisation unit of QUT. The project is in the second stage of proof-of-concept funding, with commercial leads being generated across a range of industries; and
- The *Recensio* IP was purchased by a new SME, Recensio Pty Ltd, which was formed by the project's primary industry partner Cognitia Studios and new investors – further testing and development is being carried out prior to commercial release.

In five of the six cases above, the sale of IP was structured such that it will deliver revenue to ACID shareholders for a period of five years (or up to a maximum amount) after the end of ACID's term. QUT has agreed to manage the distribution of revenue on behalf of all ACID shareholders.

5.3 Communication strategy

Over the course of ACID's life, its communication strategy directly supported the delivery of Commonwealth milestones and business objectives. All communication and marketing activities were aligned with the organisation's strategic direction, allowing ACID to allocate scarce resources to priority areas.

The strategy focused on three key result areas: stakeholder relations, brand building, and internal communication. Communication activities within the strategy included:
- stakeholder reports and visits;
- regular events to highlight ACID research and development for stakeholders, internal audiences, and potential new partners and clients;
- case studies and success stories for stakeholders and wider audiences;
- the ACID website, annual report, and newsletter;
- media releases and features as opportunities arose;
- participation in industry trade shows and professional/industry conferences – in addition to academic conferences and journals; and
- engagement with new audiences through social media and networks.

In its final year, ACID celebrated the many successes of its research publicly, exposing the research and the researchers who made it possible to opportunities for future destinations.

5.4 End-user involvement and impact

ACID worked closely with its industry partners and university researchers to understand the broad environment in which it operated. The involvement of industry participants meant ACID was strongly placed to provide a fully integrated approach to the assessment of industry needs and research opportunities.

Several participants provided opportunities and venues for ACID to demonstrate and/or test its research outputs with real users as research test beds or for early phases of commercialisation or public release.

Table 6: End-user involvement in CRC activities, 2009–10

End-User	Relationship	Activity and Location	Benefits to End User
Endeavour Foundation	Industry Participant	Workshops and trials of interactive activities (Brisbane)	New interactive activities for clients and new communications opportunities for staff.
QUT Library	Research Collaborator	Use of technical demonstrators for student information displays (Brisbane)	Interactive noticeboard system.
Queensland Museum	Research Collaborator	Research, 3D modelling of artefacts (Brisbane)	Web-based display of artefacts
ABC Radio National	Research Collaborator	Research; interaction design; ethnography (Melbourne, Sydney, Brisbane)	Redesign of Pool website
Deloitte Digital	Research Collaborator	Research; interaction design; ethnography; data visualisation (Melbourne, Sydney)	Data Visualisation tools and reports
State Library of Queensland	Research Collaborator	Use of demonstrators for family history and indigenous knowledge displays (Brisbane)	Interactive noticeboard system and video wall software
Queensland Museum	Research Collaborator	Research, 3D modelling of artefacts (Brisbane)	Web-based display of artefacts
Institute of Creative Industries and Innovation	Research Collaborator	Research, utilisation of developed platform (Brisbane)	Licensing of Yodel Platform and researcher Harpreet Singh
HITLabNZ	Industry Participant	Research (New Zealand)	Access to research demonstrators, outputs and reports in augmented reality software and hardware and long-term shareholder/ participant benefit derived from incorporating ACID research in ongoing business.

End-User	Relationship	Activity and Location	Benefits to End User
Brisbane Powerhouse Centre for Live Arts	Research Collaborator	Research demonstrators used for public workshops	Unique activities added to their PowerKidz attractions.
CreActive	Research Collaborator (SME)	Use of network jamming demonstrators for public workshops (Brisbane)	Exploring new business opportunities around ACID network jamming systems.
Lonely Planet	Research Collaborator	Use of information data for interactive tourism application for the GovHack competition (Melbourne)	Insight into innovative uses for their existing information properties, and public exposure.
SGI	Industry Participant	Research, business development (Brisbane)	Exploring new business opportunities that utilise ACID's Recensio online annotation technologies.

6. Education and training

Student participation in the CRC

ACID's original goal was to support 40 to 50 post-graduate students over its seven-year funding cycle. It met that goal by supporting 47 scholarships to 45 students during the life of the scholarship program, with 31 completions or discontinuations by 30 June 2010 and the remainder expected to complete in the next twelve months. See *Table 7: Student progress and graduate destinations*.

In anticipation of ACID's closure on 30 June 2010, no new scholarships were offered during 2009–10. Instead, ACID focused on supporting existing students to completion, and ensured there would be no disruption to continuing students in the context of ACID's closure.

ACID provided the students with regular opportunities to discuss their progress, research practice and findings through virtual meetings, workshops and seminars, telephone consultations and quarterly reporting mechanisms. In addition, students were encouraged and supported to attend and present at key national and international conferences. ACID also hosted its own international symposium – Jamskölan09 – that involved students researching digital tools to support creative engagement. See *Table 8: ACID education events 2009–10*.

In all cases, students were encouraged to work within ACID's foundation research program and/or the contract research program, under the leadership and guidance of project leaders and industry partners. Broader industry collaborations and partnerships involving students were documented in internal reports for use by industry partners.

Student participation in industry

In addition to the scholarship program, ACID supported 16 students in industry placements and collaborations over its seven-year term, through formal internships and facilitated partnerships in the context of ACID projects. These were designed to strengthen links between ACID and its partners, and to augment the transfer of technology, knowledge and skill development between the CRC and industry. See *Table 9: ACID industry placements and collaborations*.

ACID's formal internships were based on an intensive immersion model, with ACID assisting students to establish links with industry, providing funds towards travel and a stipend for living expenses, providing pastoral support during the internship, and assisting the student in drawing out learnings and recommendations during final reporting.

ACID made the formal internship program available to all students enrolled in appropriate courses at partner universities. The program was not limited to existing recipients of ACID scholarships.

The ACID Prize

ACID sponsored the 2009 ACID Prize for Tangible Media, for graduating students in the QUT Bachelor of Communication Design. The prize was awarded on the criteria of highest academic grade and most thorough resolution. The 2009 ACID Prize for Tangible Media was awarded to *Sonic Footprints*, created by Chris Gordon, Ryan Pascoe and Dane Tennant.

Student success – case study: Viveka Weiley

ACID student Viveka Weiley, a PhD candidate at UTS, was shortlisted for the CRC Association Early Career Scientist Award for his work in designing new digital systems to support collaborative creativity.

Mr Weiley's work explores how unobtrusive devices can pervasively connect distributed workplaces, mixing the real and virtual environments of colleagues working in separate locations. His trans-disciplinary research drew on cognitive science, education theory and architectural theory, tested in the real world in creative workplaces including Pixar Animation Studios in California and ABC Innovation in Australia.

Prototypes include a low-cost camera and projection system to allow collaborators working apart to sketch together, digital photo frames that indicate the presence of distant collaborators, and micro-projectors to give remote collaborators a panoramic view of each other's environments.

As a result of his award nomination, Mr Weiley has already fielded practical enquiries from a number of industry sectors including software development, communications infrastructure and commercial scientific research.

Table 7: Student progress and graduate destinations

Student	Scholarship	Status	Destination
Jeff Axup	PhD, UQ	Completed	Manager, Websense Inc, San Diego USA
Gerhard Bachfischer	PhD, UTS	Completed	Lecturer, UTS
Lloyd Barrett	PhD, QUT	Continuing	
Keiran Bartlett	Masters, UQ	Completed	National Academic Coordinator, QANTM College, Brisbane
	PhD, UQ	Completed	
Reuben Braithwaite	Masters, RMIT	Discontinued	
Marcos Caceres	PhD, QUT	Final seminar completed	Platform Architect, Opera Software, Norway
Chris Denaro	Masters, QUT	Completed	Lecturer, Animation, QUT
Gaurang Desai	PhD, QUT	Continuing	
Subas Dhakal	PhD, MU	Under examination	Tutor, MU
Jared Donovan	PhD, UQ	Completed	Postdoctoral Fellow, University of Southern Denmark
Penny Drennan	PhD, UQ	Completed	Lecturer, Game Design, QUT
Michael Dunbar	PhD, RMIT	Completed	Lecturer, RMIT
Marcus Foth	PhD, QUT	Completed	Associated Professor, QUT
Stef Gard	Masters, QUT	Discontinued	Lecturer, QUT
Eryn Grant	PhD, QUT	Final seminar completed	Tutor, QUT
Irina Haugane	Honours, QUT	Completed	Museum Curator, Norway
Jake Hempson	Masters, QUT	Continuing	

Student	Scholarship	Status	Destination
Clint Heyer	PhD, UQ	Completed	Research and Development, ABB (oil and gas R&D), Norway
Damian Hills	PhD, UTS	Continuing	
Alissa Huie	Honours, QUT	Completed	Community Development Officer, Hornery Institute, Brisbane
Sherwin Huang	Masters, QUT	Completed	Interaction Designer, Locatrix Communications, Brisbane
Andrew Johnston	PhD, UTS	Completed	Senior Lecturer, UTS
Dennis Lee	PhD, UQ	Completed	Assistant Professor, American University, Dubai
Steven Livingstone	PhD, UQ	Completed	Postdoctoral Fellow, McGill University, Canada
Andrew Loch	PhD, UQ	Continuing	
Jamie Madden	Masters, UQ	Completed	Founder, Dancenode.com
Susan McCauley	PhD, RMIT	Continuing	
Jennifer Michelmore	Masters, QUT	Completed	Community Development Manager, Hornery Institute, Brisbane
Colleen Morgan	Honours, QUT	Completed	PhD candidate, QUT
Ann Morrison	PhD, UQ	Under examination	EU Project Manager, Helsinki Institute for Information Technology, Aalto University, Finland
Sarah Moss	PhD, UTS	Continuing	
Jason Nasarczyk	PhD, QUT	Continuing	
Julien Phalip	PhD, UTS	Completed	Director, The Interaction Consortium, Sydney
Nicole Podleschny	PhD, QUT	Continuing	
Malcolm Pumpa	PhD, QUT	Continuing	
Fiona Redhead	Masters, UQ	Completed	PhD candidate, QUT
	PhD, UQ	Continuing	
Markus Rittenbruch	PhD, UQ	Completed	Project Leader, NICTA
Kirsten Sadler	PhD, UTS	Continuing	Senior Advisor, KPMG Advisory, Sydney
Miri Segalowitz	Masters, QUT	Continuing	
Nifeli Stewart	PhD, RMIT	Continuing	
Yolande Strengers	PhD, RMIT	Completed	Research Fellow, RMIT
Penny Sweester	PhD, UQ	Completed	Senior Game Designer, 2K Games, Canberra
Mia Thornton	Honours, QUT	Completed	Research Fellow, Cultural Heritage Informatics Research Oriented Network, Brighton UK PhD candidate, Australian National University
Gang Wang	PhD, UQ	Continuing	
Viveka Weiley	PhD, UTS	Continuing	

Table 8: ACID education events, 2009–10

Date	Activity	Location
7–9 July 2010	Student attendance and presentation at the Sixth International Conference on Ubiquitous Intelligence and Computing	UQ, Brisbane
3–12 August 2009	Jamskölan09, International workshop and symposium on arts education through network jamming and generative media	QUT, Brisbane
10 August 2009	Creative Engagement Cross ACID Seminar	QUT, Brisbane
27–30 October 2009	Three students presented papers at the Creativity and Cognition Conference	University of California, Berkeley USA
17 November 2009	Virtual Seminar and catch-up	QUT, RMIT, UQ, UTS
23–27 November 2009	Student attendance and presentations and OzCHI	University of Melbourne
March 2010	Student progress report review and follow-up	QUT, Brisbane
May 2010	Education Program review and windup strategy: student consultations and final reporting	QUT, Brisbane

Table 9: ACID industry placements and collaborations

Student	Institution	Industry Host / Partner
Fiona Redhead	QUT	State Library of Queensland
Mia Thornton	QUT	SGI Pty Ltd
Marcus Foth	QUT	Kelvin Grove Urban Village
Jennifer Michelmore	QUT	Hornery Institute
Jeff Axup	UQ	Brisbane City Council
Eryn Grant	QUT	Brisbane City Council
Marcos Caceras	QUT	Opera Software
Yolande Strengers	RMIT	Victorian Department of Resources, Energy and Tourism
Sarah Moss	UTS	Tobii Technologies, Sydney
Nifeli Stewart	RMIT	Second Road, Sydney
Donna Hancox	QUT	Micah Projects, Brisbane
Svenja Kratz	QUT	SymbioticA, WA
Michael Dunbar	RMIT	IxDA.org
Fiona Vance	QUT	The Drama Institute
Gang Wang	UT	HitlabNZ
Viveka Weiley	UTS	Pixar Animation
		ABC Innovation

7. Third year review recommendations

ACID commissioned a formal, independent third-year review in 2006. The review panel comprised:
- Mr Gavin Nicholson, Senior Lecturer, School of Accountancy, QUT
- Mr Tom Kennedy, Chief Executive Officer, MediaZoo
- Dr Ian Fuss, Chief Scientist, Information Science Laboratory, DSTO
- Dr John O'Sullivan, nominee of CRC Program.

The panel delivered its report in December 2006, concluding that ACID was attaining a number of very positive outcomes and had achieved much in developing a highly innovative capacity to blend technology with human behaviours in innovative ways. The panel identified several challenges facing ACID at that time, in particular the need to:
- strengthen the management infrastructure;
- crystallise the research outcomes;
- continue to develop commercialisation infrastructure;
- continue to strengthen the in-kind contribution;
- strengthen stakeholder management;
- broaden and strengthen industry ties; and
- strengthen researcher engagement.

The ACID Board concurred with the panel's assessment of challenge areas. All recommendations were applied, and a continuous improvement regime was implemented across ACID's operations.

Table 10: Implementation of third year review recommendations

Recommendation (Summarised)	Applied	Notes
R1. Continue to analyse the benefits and costs (both direct and indirect) of the structure adopted to ensure continued effectiveness. R2. Implement new senior management structure	Yes	During 2006–07, the Board restructured the CEO role into two positions: an Executive Director responsible for overall strategy and the research direction, and a General Manager responsible for operations and commercialisation. In June 2007, the ED resigned and the two roles were re-combined into a single CEO role. The Board actively monitored the effectiveness of the CEO role for the remaining life of the CRC.
R3. Further develop internal reporting systems/routines, particularly quarterly reporting system and development opportunities for middle level managers.	Yes	Systems developed and monitored regularly.
R4. Review measures to ensure key positions are appropriately scoped and supported.	Yes	Review completed and formal performance review process implemented by 30 June 2007. Remained in use until 30 June 2010.
R5. Review/increase the role of the Research Leaders Group in ACID's research direction.	Yes	Review completed by June 2007. RLG role increased by direct input to Board and involvement in management structure. RLG provided direction to ACID's wind-up and legacy building activities in Yearseven7.

Recommendation (Summarised)	Applied	Notes
R6. Periodic review of Board role and performance.	Yes	Formal review of role and performance, February 2007. Subsequently, review of Board's role and succession planning was triggered by changes in directors.
R7. Develop practical measures to support ACID's continued maintenance of highest standards around conflicts of interest.	Yes	Register of interests established before 30 June 2007, with annual formal review. 'Declarations of interest' was a standing agenda item at Board meetings.
R8. Review performance management system for key personnel.	Yes	Review completed, organisational KRAs and senior executive KPIs established in April 2007. Regular performance review system implemented for all staff by 30 June 2007 and remained in use to 2010.
R9. Ensure research/commercialisation resource balance matches strategy. R10. Ensure internal systems and routines maintain flexibility required to respond quickly to market opportunities.	Yes	Review completed and function strengthened via appointment of a Commercialisation Manager by 30 June 2007. Ongoing monitoring continued via the performance review system.
R11. Develop a standard approach to projects: industry leadership, business plan, extra funding, and development opportunities for team members.	Yes	Commercialisation pipeline and income funnel were a standard part of ACID's project management. Specific projects were developed on a case-by-case basis as required.
R12. Continue to refine in-kind capture and reporting regime, particularly collection of data.	Yes	April 2007: ongoing reporting of in-kind by all partners implemented. June 2008: more active monitoring and reporting systems introduced to improve capture.
R13. Investigate alternative in-kind resources from core participants.	Yes	See R12. Also, Variation 1 of 2009 captured a wider range of in-kind support by core and supporting participants than previously.
R14. Develop an integrated approach to engage key stakeholders and gauge their needs and opinions on ACID performance.	Yes	Ongoing stakeholder engagement strategy developed and implemented in June 2007, further refinement and improvement continued to the end of year seven.
R15. Continue to build industry links, particularly with high-potential commercialisation prospects.	Yes	Marketing initiatives included launch of new website in February 2007, enhanced sponsorship engagement with industry, active program of commercialisation prospecting introduced in 2008 and maintained to date.
R16. Review procedures and systems for engaging partially funded students to ensure commitment to the organisation.	Yes	Student engagement reviewed by June 2007; enhanced procedures aligned each student with an active research project. New program of internships and hands-on support implemented in late 2008.
R17. Review IP requirements to ensure the right blend of capturing value and encouraging collaboration. R18. Assess IP capture routines, embed in quarterly review process.	Yes	ACID's proprietary IP registry was reviewed and continuous improvement implemented. All participants were responsible for multi-location collaboration and for capturing IP properties. This was a standard agenda item for formal quarterly project reviews.

8. Performance measures

Table 11: Progress on performance measures 2009–10

Performance Measure	2003–09 Aggregated Totals	Additional outputs 2009–10
CRC Program Objective 1: Enhance the contribution of long-term scientific and technological research and innovation to Australia's sustainable economic and social development		
Centre Objective 1.1: Multidisciplinary research that leverages existing research and development programs through a strong network of participants.		
Research outputs will be in excess of 20 processes, methods, patents and publications from multi-disciplinary teams working across multiple nodes.	245 (total: 2003–09)	54 (additional in 2009–10)
Centre Objective 1.2: Demonstrate new interactive content, and hardware and software prototypes in user-driven context for the creative industries sector.		
Develop in excess of 20 prototypes for products in content, hardware and software as defined by user feedback and input.	104 (total: 2003–09)	5 (additional in 2009–10)
Centre Objective 1.3: Deploy R&D to enterprise development through the creation of flexible, transferable and reproducible processes for commercialisation.		
Up to $3M in income achieved through licenses, spin-offs, consulting and other income generation mechanisms.	$1,451,000 (total: 2003–09)	$129,000 (additional in 2009–10)
CRC Program Objective 2: Enhance the transfer of research outputs into commercial or other outcomes of economic, environmental or social benefit to Australia		
Centre Objective 2.1: New partnerships and beneficial linkages, strengthening research and development efforts of industry partners.		
Industry participants will receive in excess of 20 prototypes providing commercialisation opportunities for products in content, hardware and software.	105 (total: 2003–09)	5 (additional in 2009–10)
Centre Objective 2.2: Development of new communities of interest for groups such as Aborigines, the aged and children through research programs and themes, such as Virtual Heritage and Community Network.		
Development of multiple, practical strategies for relating technical innovation to community development.	2003–09 Multiple strategies for a diverse range of community clients and partners were developed over the period 2003 to 2009.	2009–10 Continued work in existing community affiliations, plus development of practical strategies for two new communities of interest via Arts Victoria and Endeavour Foundation.

Performance Measure	2003–09 Aggregated Totals	Additional outputs 2009–10
Centre Objective 2.3: Develop research for national and international companies through an SME Consortium configured to provide research and development services.		
SME consortium of over 12 industry partners that will attract 1–2 research/production contracts per year.	2003–09 Focus on attracting new members through ACID Services' commercial arrangements.	2009–10 Focus on attracting new industry partners through commercial arrangements, as per Variation 1 of 2009.
CRC Program Objective 3: To enhance the value to Australia of graduate researchers		
Centre Objective 3.1: Delivery of a critical mass of new research talent into an emerging industry.		
40–50 post-graduate students, working collaboratively in cross-disciplinary, cross-institutional, international projects, with options to participate in CRC-sponsored online education and training courses. Integrate undergraduate students.	Target Met	Target Met
Centre Objective 3.2: Industry–university exchange opportunities for post-graduate students.		
Establishment of a post-grad supervision program providing 40–50 exchange opportunities with industry participants and affiliates.	Target Met	Target Met
Centre Objective 3.3: Enhancement of existing education programs in interaction design across vocational, undergraduate and post-graduate programs.		
Up to 30 short courses developed from research output and taught to both internal and external clients.	31 (total: 2003–09)	Target Met
CRC Program Objective 4: Enhance collaboration among researchers, between researchers and industry or other users, and to improve efficiency in the use of intellectual and other research resources		
Centre Objective 4.1: Research programs are designed to benefit from the multiple competencies that reside in the Centre partners.		
Project proposals must demonstrate at least two university partners working in a multi-disciplinary, multi-nodal capacity.	Completed	Completed
Centre Objective 4.2: Research is designed to respond to user needs.		
Project proposals must demonstrate user input and at least one industry participant.	Completed	Completed
Centre Objective 4.3: Whenever practical, international collaborators are involved in projects to enhance the global perspective.		
In excess of three projects will have international research involvement. The education program involves three international partners working collaboratively on one project per year.	21 (total: 2003–09)	Completed

9. Wind-up plan

The wind-up plan outlined ACID's commitment to:
- meet its obligations under the terms of the Commonwealth Agreement by 30 June 2010;
- meet its obligations under the Shareholder Agreement and all agreements with external organisations;
- maximise the benefits of activities for participants, end users and the community; and
- protect the interests of participants, staff and students.

ACID met all these commitments.

Research, utilisation and education activities
ACID's obligations under the Commonwealth Agreement were met in full and are reported elsewhere in this document and in DIISR's online reporting system. There are no residual activities.

Arrangements were made for the ongoing supervision of students whose course of studies were not completed by 30 June 2010, and all scholarship payments were made in advance prior to 30 June 2010.

Future of the incorporated entity
The Australasian CRC for interaction design Pty Ltd is a proprietary company limited by shares and governed by a Constitution and a Shareholder Agreement. The future of the company after the end of the CRC grant is a matter for the shareholders.

As foreshadowed in the wind-up plan, the ACID Board recommended to shareholders:
- that the company be wound up and deregistered;
- that residual intellectual property – that is, IP not otherwise transferred to new third-party owners (see *Intellectual Property Management* on page 24 for the list of transferred IP) – be assigned to specific shareholders; and
- that all other residual assets be distributed among shareholders upon deregistration.

At time of writing, no shareholder had indicated any concern with or dissent to the recommendation, and the deregistration process was in train.

Company accounts and business contracts
As outlined in the wind-up plan, ACID had finalised all accounts payable and accounts receivable by 30 June 2010 other than those incurred in relation to and final reporting and deregistration of the company. All business contracts, such as leases and insurance contracts, were terminated as at 30 June 2010 other than essential run-on insurances.

Storage and archive of records
All accounting records, company books and records, and contract materials will be kept for a period of seven years in secure storage by Iron Mountain, a commercial provider of secure data storage facilities. Iron Mountain will securely destroy all records at the end of the seven-year storage period. Access to these records can be requested via the ACID Chief Executive Officer Amanda Boland-Curran at amanda@acid.net.au.

The ACID website at www.acid.net.au was updated in a long-term legacy format as at 30 June 2010 and will be hosted and maintained for a period of five years by B-Hosting, a commercial provider of web hosting solutions. The ACID website is optimised for the Mozilla Firefox browser.

Payment for records storage and website hosting for the relevant periods was made in advance.

Budget
The indicative budget foreshadowed in the wind-up plan predicted cash income from contract research, commercialisation of intellectual property and other sources at $431,000, with a net balance of $114,785 available for distribution to shareholders at deregistration.

Actual cash income for the final year was lower than predicted over the course of the year (totalling $129,000 over the period). As a result, ACID management and the Board carefully managed cash flow and expenditure to ensure the company remained solvent at all times.

At 30 June 2010, ACID held $84,144 in cash at bank, with cash income and expenditure for the period of deregistration forecast to net to $69,167 expenditure. This expenditure will include legal, audit and accounting fees; minor operating expenses not invoiced by the supplier prior to 30 June; salaries, wages and directors' fees; and GST.

10. Glossary

ABC	Australian Broadcasting Corporation
ACID	Australasian CRC for interaction design Pty Ltd
ACID Services Pty Ltd	Wholly-owned subsidiary of ACID
AIIA	Australian Information Industry Association
ARC	Australian Research Council
Augmented Reality	A live, direct or indirect view of a physical real-world environment whose elements are augmented by virtual computer-generated imagery (http://en.wikipedia.org/wiki/Augmented_reality)
CEO	Chief Executive Officer
Cipher Cities	ACID-developed location based game engine
CRC	Cooperative research centre
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DEST	Commonwealth Department of Education, Science & Training
DIISR	Commonwealth Department of Innovation, Industry, Science & Research
DITTO	First commercial release of the diversionary therapy device by Diversionary Therapy Technologies Pty Ltd
Diversionary Therapy	Methods of therapy that aim to divert the patient's attention from the area of treatment
DSE	ACID-developed Digital Songlines Engine
DSTO	Defence Science & Technology Organisation
ED	Executive Director
GovHack	An event hosted by the Australian Government on 30 and 31 October 2009, to encourage greater use by citizens of government data via mashups and applications
GM	General Manager
ICI	Institute of Creative Industries and Innovation
ICT	Information and communications technologies
Infopoint	Blue-tooth demonstrator from Urban Interfaces Project
IP	Intellectual property
IT&T	Information technology and telecommunications
ITRI	Interactive Television Research Institute, Murdoch University
Jam2Jam	Interactive music system demonstrator from Network Jamming Project
Mashup	A Web page or application that uses and combines data, presentation or functionality from two or more sources to create new services
Metascore	Generative film scoring demonstrator from Adaptive Media Project
MiLK	ACID-developed Mobile Learning Kit
MMS Me	An interactive platform allowing multiple users to participate in real-time cooperative networks via mobile phones and the Internet
Mixdex	iPhone music application demonstrator from Adaptive Media Project
MU	Murdoch University, Perth

Nnub	Digital whiteboard demonstrator from the Urban Interfaces Project
NZ	New Zealand
OLPC	One Laptop Per Child, a global movement to empower the children of developing countries by providing one connected laptop to every school-age child, based at the MIT Media Lab in Massachusetts USA (http://laptop.org)
Qld	Queensland
QM	Queensland Museum
QUT	Queensland University of Technology
R&D	Research and development
RMIT	RMIT University, Melbourne
SGI	Silicon Graphics Pty Ltd
SLQ	State Library of Queensland
SME	Small to medium enterprise
UTS	University of Technology, Sydney
UQ	University of Queensland
3D	Three dimensional
3Dsee	Website demonstrator from ACID Vision Project